Tirzepatide (Mounjaro) - a novel Pharmacotherapeutic Agent for Obesity

Tayyaba, Tasmiyah Siddiqui, Payal Rani Doultani

Madam, Obesity and its consequential morbidities are a major global burden. with Pakistan having a national obesity risk of 6.5/10.[1] Raised BMI (body mass index-an index of weight to height ratio) along with obesity is one the prime risk factors that lead to numerous other non-transmissible diseases like heart diseases, Type 2 diabetes, osteoarthritis and certain carcinomas (Breast, ovarian, colon, liver, prostate, gall bladder). Lifestyle interventions can only produce modest (~5-10%) weight loss, necessitating other antiobesity interventions. Therefore, pharmacological approaches to losing weight are in the limelight. The U.S. (FDA) Food and Drug Administration has also authorized pharmacological treatment as a new treatment option to incorporate into weight management programme with concomitant dietary and physical behavioral remodelling in patients having 27 kg/m2 or higher BMI along with the accompaniment of any of the following obesity-related comorbidities: T2DM, hypertension, or hypercholesterolaemia[2]. As of 2021 around 5 antiobesity medications (AOMs) have been approved by FDA so far but a recent randomized, placebo controlled double blind trial has incredibly unveiled the potential effects of tirzepatide as an antiobesity drug.

Tirzepatide (Mounjaro) is an exclusive and the only dual receptor agonist the mimicking actions of glucose-dependent insulinotropic polypeptide (GIP) and glucagon-like peptide-1 (GLP-1) and therefore referred as "twincretin". This drug, originally used to treat T2DM, has now been incredibly effective in treating obesity. According to a recent randomized control trial, 85% of participants with a 5.0 mg dose, 89% participants with a 10 mg dose and 91% participants with a 15 mg dose showed a significant reduction in weight[3] which is a corroborating evidence supporting tirzepatide as antiobesity drug. According to SURPASS-2 clinical trial, comparing efficacy of tirzepatide to semaglutide (a selective GLP-1 receptor agonist), tirzepatide was proven to reduce body weight and A1C levels more effectively than semaglutide demonstrating it to be better in treating not only diabetes but obesity[4]. The SURMOUNT-1 trial, depicting the efficacy of tirzepatide, showed significant weight reduction of up to 22.5 % in obese adults[5]

Some of the adverse effects noted with its use were gastrointestinal events like nausea, vomiting and diarrhoea. A few contraindications are gallbladder disease, pancreatitis, genetic predisposition of medullary thyroid carcinoma and MEN (multiple endocrine neoplasia) Type 2.

The therapeutic efficacy of this drug is likely to change the treatment paradigm for obesity and could prove to be a breakthrough in treating obesity. Easy (subcutaneous) administration, low frequency of dosage (once a week) and alleviating multiple diseases are a few reasons why this drug is promising in the long run.

Submission completion date: 27-08-2022
Acceptance date: 08-12-2022

Disclaimer: None to declare.

Conflict of Interest: None to declare.

Funding Sources: None to declare.

References

1. Pakistan | World Obesity Federation Global Obesity Observatory. [Online] [Cited 2022 July 18]. Available from: URL: https://data.worldobesity.org/country/pakistan-167/
2. FDA Approves New Drug Treatment for Chronic Weight Management, First Since. [Online] [Cited 2022 March 12]. Available from: URL: https://www.fda.gov/news-events/press-announcements/fda-approves-new-drug-treatment-chronic-weight-management-first-2014.
3. Jastreboff AM, Aronne LJ, Ahmad NN, Wharton S, Connery L, Alves B, et al. Tirzepatide Once Weekly for the Treatment of Obesity. [Online] [Cited 2022 May 29]. Available from: URL: https://pubmed.ncbi.nlm.nih.gov/35658024/
4. Frías JP, Davies MJ, Rosenstock J, Pérez Manghi FC, Fernández Landó L, Bergman BK, et al. Tirzepatide versus Semaglutide Once Weekly in Patients with Type 2 Diabetes.[Online] [Cited 2022 June 21]. Available from: URL: https://pubmed.ncbi.nlm.nih.gov/34170647/
5. Lilly's tirzepatide delivered up to 22.5% weight loss in adults with obesity or overweight in SURMOUNT-1 | Eli Lilly and Company. [Online] [Cited 2022 July 27]. Available from: URL: https://investor.lilly.com/news-releases/news-release-details/lillys-tirzepatide-delivered-225-weight-loss-adults-obesity-or.

2nd Year MBBS Student, Dow University of Health Sciences, Karachi, Pakistan.
Correspondence: Tasmiyah Siddiqui. Email: tasmiahsiddiqui@gmail.com
ORCID ID. 0000-0002-1620-5102
DOI: 10.47391/JPMA.7685